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DUAL PHASE SKIN CARE COMPOSITIONS

Grantee: Henkel Kommanditgesellschaft auf Aktien
40580 Düsseldorf-Holthausen (DE)

Inventors: Barbara Heide
D-47809 Krefeld (DE)

Pascal Bordat
D-40699 Erkrath (DE)

References cited:

DE-A-3 841 775
US-A-4 335 103
US-A-5 059 414

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[0001]

The invention concerns a two-phase skin care agent, preferably a two-phase skin cream, which is packaged in a tube and can be squeezed from the tube in the form of parallel, concentric or striped strands.

[0002]

Various tubes are known for holding creams that consist of two components and that are supposed to be kept separate before use, or that are differently colored or pigmented, and that can be squeezed from the tube in the form of parallel, concentric or stripped strands. However, this technique has been realized on a larger scale only for toothpastes.

[0003]

This may be because in practice many problems arise, which are essentially explained by the fact that the components are not supposed to mix with each other before they are squeezed out of the tube so that the separately held ingredients of these components do not prematurely react with each other or so that the different components still appear as separate phases when squeezed out of the tube, i.e., in the form of differently colored stripes.

[0004]

Thus, it was proposed in DE Patent 820 268 that two separate tubes be combined in a concentric arrangement to form a single tube and the orifices of the two separate tubes be designed so that when pressure is applied to the outer tube the two components emerge as a single strand with a core consisting of the contents of the inner tube.

[0005]

Such an arrangement however is expensive and difficult to realize on an industrial scale. In stripe dispensers in accordance with US 2,789,731, US 2,935,231 and DE-A-2 141 436, there is, however, the danger that the carrier cream and the stripe cream will mix at the phase boundary and a sharp phase boundary will no longer be visible in the strand that is squeezed from the tube.

[0006]

US-A-4 335 103 discloses a skin care agents that consists of separate, plastic flowing components, each containing a thickener, which are held in a container, where the first component is a hydrogel and the second component is an emulsion. The phases remain stable side by side without mixing.

[0007]

US-A-5 059 414 discloses hair and skin care products that contain two highly viscous separate components. The components, which are held in a pump dispenser or in a tube, remain stable side by side and can be squeezed out, for example, in the form of a striped strand.

[0008]

Therefore, there was the task of finding additional formulations for skin and body care agents that make possible the application of paste or cream preparations from tubes in the form of strands that are multiphase strands as they are squeezed out of the tubes, and the phases of which are preferably differently colored. Such products have particular attractiveness not only for the user, but they also make it possible to apply active agents onto the skin that may react with each other or become deactivated during long-term storage.

[0009]

This task was solved in accordance with the invention by a skin or body care agent consisting of two separate, plastic flowing components, which are held in a tube and which can be squeezed from this tube jointly in the form of parallel, concentric or stripped strands of the two components, where the first component contains a continuous aqueous phase and the other component contains a continuous oily phase.

[0010]

Skin or body care agents here are understood to mean preparations that serve to protect and care for the skin or hair and are distributed on the surface of the skin or on the hair in the

form of plastic flowing preparations and remain there. A rheological behavior that is typical for paste, cream and gel systems and is characterized by a flow limit that allows the product to appear to be a solid at a shear stress that is less than this flow limit is called "plastic flowing." Flowing of the substance is not observed until the shear stress is greater than the flow limit. The rheological behavior above the flow limit can be described by semi-empirical equations of state, for example, the Bingham equation or the Casson equation.

[0011]

Tubes that are suitable for squeezing out two separate, plastic flowing components in the form of concentric or striped product strands have been described many times and have long been commercially available for toothpastes with colored stripes. These tubes are designed so that from the tube orifice a small tube projects into the tube and it has orifices at the end turned toward the tube opening. In the space around this tubelet, the tube is filled with, for example, a colored second component, i.e., the carrier component. The tubelet must project into the carrier component. By pressure on the tube the carrier component is forced through the tubelet and against the second component, which in turn is led through the orifices onto the stream of the carrier cream and is squeezed out with it. In this way both components are applied jointly in the form of a strand. The strand can have narrow or wider stripes of the second component according to the size and shape of the orifices. If the orifice has the shape of an annular gap, the carrier phase can be entirely surrounded by the second phase. Through the design of the tube orifice the product strand can be made to be either cylindrical, i.e., with a circular cross section, or with a polygonal cross section.

[0012]

In accordance with the invention an aqueous gel, an aqueous dispersion, an oil-in-water emulsion or a water-in-oil-in-water emulsion, an aqueous microemulsion or a mixture of such systems can be used as the component with a continuous aqueous phase. It is only important that water is the external continuous phase, thus that the system is spontaneously dilutable with water.

[0013]

For example, an aqueous system thickened with hydrocolloids or surfactants or both can be used as aqueous gel. Aqueous systems thickened with inorganic thickeners, for example, with silicic acids or layer silicates can also be used. An aqueous dispersion is understood to be a dispersion of solid particles in an aqueous medium, for example, a dispersion of pigments, waxes or polymer particles. Oil-in-water emulsions and water-in-oil-in-water emulsions are the best

known bases of cosmetic skin care agents. All of these components that have a continuous aqueous phase, however, should have a viscosity of more than 0.1 Pa·s (20°C), preferably more than 1 Pa·s (20°C) (dynamic viscosity about the flow limit), either through suitable thickeners or through the content of dispersed or emulsified phase.

[0014]

Oils and fats that, either because of their molecular structure or through thickening with known thickeners, have a viscosity of at least 0.1 Pa·s, preferably at least 1 Pa·s (20°C), are suitable as the component having a continuous oil phase. For example, Vaseline (petrolatum) or other vegetable, animal or synthetic fats and silicones that are ointment-like or plastic flowing at 20°C are suitable. Oils with lower viscosity or ones that do not have a flow limit should be converted to a plastic flowing state through known oil-soluble thickeners, for example, soaps, oil-soluble polymers, organically modified layer silicates or dissolved waxes. Another possibility of converting oils to a plastic flowing state is to emulsify into them a discontinuous aqueous phase, which in turn can optionally be an oil-in-water emulsion. Water-in-oil emulsions or oil-in-water-in-oil emulsions formed in this way can be obtained as plastic flowing systems (creams) either through the viscosity of the outer oil phase or through the amount of the inner aqueous phase.

[0015]

Preferably, the continuous aqueous phase is an aqueous gel or an oil-in-water emulsion, and the discontinuous oil phase is a thickened oil or an oil-in-oil emulsion. The two plastic flowing components preferably have a flow limit, which lies in the range of 50-500 Pa (pascal) at 20°C.

[0016]

For high phase boundary stability with respect to bleeding or mixing, it is also advantageous if the difference between the flow limits of the two components is no greater than 20%, with respect to the higher flow limit.

[0017]

Besides the thickeners or the emulsified phase, the two components of the two-phase skin care agents in accordance with the invention can contain all of the components that are usual for the desired application in the concentrations that are suitable for it.

[0018]

Skin and body care agents in accordance with the invention in which the two phases are differently colored or pigmented and in this way have an aesthetic attraction appearance because of the colorful appearance of the product strand emerging from the tube are preferred.

[0019]

All water-soluble or oil-soluble dyes that are permitted for the dyeing of cosmetic products are suitable as dyes. For example, the oil phase can be dyed with oil-soluble dyes or the aqueous phase can be give a cloudy appearance with dispersed pigments. The aqueous phase can also be made a clear colored gel and the oil phase a white, optionally pigmented water-in-oil cream. Another variation is to formulate, for example, the oily phases as a clear, optionally colored gel and the aqueous phase as a pigmented, white oil-in-water cream.

[0020]

Product strands with aesthetically quite diverse characters can be achieved in the interplay with the design of the tube orifice and with the number, size and shape of the orifices through which the second component emerges from the tube.

[0021]

Moreover, different cosmetic agents can be added to the two components, so that, for example, the aqueous phase can contain cleansing agents and the oily phase can contain body care agents. Also, liposomes, for example, which would be unstable in the oily phase, can be added to the aqueous phase. Active agents that are unstable or insoluble in the presence of water, for example, could be added to the oily phase.

[0022]

The following example is intended to illustrate the object of the patent in more detail:

Example

[0023]

An O/W carrier cream and a W/O stripe cream of the following formulations were filled into a tube dispenser as in DE-A-3 841 775. Here the W/O night cream formed the stripe cream and the O/W day cream formed the carrier cream. A total of 118 mL day cream and 7 mL stripe cream were filled into a 125 mL tube.

Carrier cream (O/W)	
Stearic acid	8.0 wt%
Cetyl-stearyl alcohol	1.5 wt%
Cetyl-stearyl alcohol + 20 mol EO	2.0 wt%
2-Octyldodecanol	5.0 wt%
Cera Alba	3.0 wt%
Paraffinum liquidum	10.0 wt%
p-Hydroxybenzoic acid propyl ester	0.3 wt%
Tocopheryl acetate	2.0 wt%
Benzophenone-3	1.0 wt%
Propylene glycol	5.0 wt%
Glycerol	5.0 wt%
p-Hydroxybenzoic acid methyl ester	0.3 wt%
Triethanolamine	0.3 wt%
Water	to 100 wt%

Stripe cream (W/O)	
Dehymuls F	8.0 wt%
Shea butter	5.0 wt%
Petrolatum	10.0 wt%
Paraffinum liquidum	5.0 wt%
Methyl paraben	0.3 wt%
Tocopheryl acetate	2.0 wt%
Propylene glycol	5.0 wt%
Glycerol	5.0 wt%
Magnesium sulfate	0.5 wt%
Phenoxyethanol	1.0 wt%
Acid Orange 24 (C.I. 20170)	0.5 wt%
Water	to 100 wt%

[0024]

When squeezed out of the tube, a square strand of the carrier cream with orange stripes of the W/O cream at the edges of the carrier strand was obtained. The phase boundary between the carrier cream and the orange stripes remained stable over 4 weeks.

Claims

1. A skin-care and body-care formulation consisting of two separate, plastically flowing components accommodated in a tube from which they can be extruded together in the form of parallel, concentric or striped strands of both components, **characterized in that** the first component comprises a continuous aqueous phase and the second component a continuous oily phase.

2. A skin-care and body-care formulation as claimed in claim 1, **characterized in that** the two phases are differently colored or pigmented.

3. A skin-care and body-care formulation as claimed in claim 1 or 2, **characterized in that** the continuous aqueous phase is an aqueous gel or an oil-in-water emulsion and the continuous phase is a thickened oil or a water-in-oil emulsion.

4. A skin-care and body-care formulation as claimed in any of claims 1 to 3, **characterized in that** the aqueous phase and the oily phase have yield points of 50 to 500 Pa at 20°C.